Standards in the Forest Plan for exceptions) The 80 acre unit size was eliminated in favor of meeting natural conditions and all resource objectives. This Management Requirement results in a substantial reduction in present net value (9 percent); first decade Allowable Sale Quantity decreases about 5 percent. Present net value reductions are primarily due to timber harvests foregone in valuable, mature timber in the first decade, and the implementation of more costly timber management practices over time However, long-term sustained yield capacity is higher because of the mix of timber management practices

The old-growth Management Requirement results in the dedication of acres of suitable timber land for wildlife habitat for old-growth dependent wildlife. Indicator species considered are pileated woodpeckers and pine marten This Management Requirement results in a three percent decrease in present net value and a five percent decrease in first decade Allowable Sale Quantity. The reduction in long-term sustained yield capacity is due to the reduction in suitable forestland because of old-growth dedication.

The riparian Management Requirement was designed to minimally protect riparian zones on the Forest Present net value and first decade Allowable Sale Quantity tradeoffs are small (present net value - less than three percent; ASQ - one percent) This MR has smaller tradeoffs because it is identified with specific areas which make up only four percent of the Forest, the harvest dispersion and old-growth Management Requirements have Forest-wide effects

The Management Requirements for the Forest were designed to protect specific qualities of the Forest Consequently, there is very little overlap in effect on present net value and Allowable Sale Quantity between Management Requirements, and the Management Requirements are mostly additive Slight overlap between the riparian Management Requirement and the harvest dispersion Management Requirement accounts for the difference in total effect

Snag and snag replacements are additional Management Requirements that have been established outside of FORPLAN analysis A test for significance indicated that these do not exhibit significant effects upon indicators, and are not listed in Appendix G (Information Regarding Management Requirements) The snag MR is designed to provide minimum snag levels, uniformly across the forest For a more detailed analysis of the significant Management Requirements (including extensive sensitivity analysis), refer to Appendix G

4. Alternative Formulation Process

a *Development of Preliminary Alternatives*

The alternative formulation process began with a review of Forest issues, concerns, and *opportunities, resource inventories and resource production capabilities identified in the* Analysis of the Management Situation, and applicable planning direction

Based on a review of these items, the Forest leadership team developed management options, ranging from lower to higher intensity, for three resource areas recreation, wildlife, and timber Each option was comprised of management direction statements for the factors important for that particular resource The resource management options were designed to incorporate issues, reflect a particular level of management intensity, and serve as a building block for Forest management alternatives

Since timber, recreation, and wildlife are largely dependent on the assignment of land areas, to some degree each is in competition with the other The options for these resources were, therefore, compared to each other to determine their compatibility. This comparison resulted in 58 combinations of these three resources that could be compatible within an integrated alternative

Since the management options for the resources included output levels close to the minimum and maximum benchmark levels, the preliminary alternatives formulated were by design within the benchmark levels, and spread throughout the entire range.

From these 58 possible alternatives, 9 preliminary alternatives were identified, based on the following objectives

a. Minimizing the number of alternatives in a range that would still include all of the resource management options;

b. Minimizing the duplication of resource options in the range, and,

c Maximizing diversity in the mix of resource option combinations

These alternatives were further developed with information about other Forest resources and they were analyzed in detail

An additional alternative was added in May 1987, in response to an appeal by the Northwest Forest Resources Council. This alternative, labeled NC, No Change, represents the potential outputs and effects of continuing implementation of the Forest's 1979 Timber Resource Management Plan without incorporating management changes to meet NFMA requirements and without consideration of more recent inventories and yield estimation.

In developing alternatives, a budget constraint was placed on Alternative A, the No Action Alternative No other alternatives have budget allocation constraints, so were allowed to reach the full economic potential of the alternative theme

As a change from Draft to Final Environmental Impact Statement, Alternative I has been added to the array of alternatives fully developed Alternative B has been modified by the Forest, in conjunction with timber industry representatives, to reflect timber production emphasis for the FEIS This alternative is carried forward as Alternative B-Modified in this FEIS Additionally, Alternative C reflects modifications made in conjunction with environmental community representatives, to incorporate amenity concerns in an alternative in the FEIS. This is carried forward as Alternative C-Modified in this FEIS. Alternatives D, E, F-departure, G and H have been eliminated in this final Environmental Impact Statement due to a lack of public support for these specific alternative designs.

b. *Alternative Development Comments Received Prior to Release of Draft Environmental Impact Statement*

During development of the alternatives, comments were received from interested groups and individuals Disposition of these comments are displayed in Appendix A Three organizations–Grant County Conservationists, Confederated Tribes of the Umatilla, and Oregon Department of Fish and Wildlife–submitted their own alternatives and suggested numerous changes to the Forest-wide and Management Area Standards After in-depth consideration by the interdisciplinary team and the Forest Supervisor, including comparison with the other Forest Plan alternatives, the groups' alternatives were not developed to be considered in detail This does not mean that the information was not used or that the substantial effort made by the groups in developing the alternatives was wasted. Many of the facets of the submitted alternatives had already been considered in the planning process and some were integrated with other alternatives being considered in detail. The major points of the alternatives submitted by the three organizations are described on the following pages.

Grant County Conservationist Alternative

a *Comment* Retain 16 currently unroaded areas as unroaded

Forest Response Alternative C-Modified retains all currently unroaded areas

b *Comment* Exclude livestock from wilderness, perennial campsites, and popular recreation areas Grazeable vegetation will be maintained at 80 percent of biological potential

Forest Response Currently permitted-use continues grazing in both wilderness areas by law Grazing is discouraged in developed campgrounds Many of these areas are fenced to exclude livestock Livestock use is also mitigated through management standards Generally livestock use is targeted at 50 percent of available annual growth on uplands and 55 percent or less of grass and grasslands in riparian areas in all alternatives except Alternative A. (Due to the lack of information the utilization level of Alternative No Change is not known) In riparian areas, grazing is targeted at 50 percent of annual growth on shrubs This level is considered acceptable use and generally meets other resource objectives Restricting use to 20 percent would have severe economic impacts without any significant additional benefits

c *Comment* No catastrophic timber salvage harvest in roadless areas, except to benefit the resources in the area No roads will be built

Forest Response No scheduled timber harvest is permitted in semiprimitive areas Harvest may be used to meet other resource objectives, mitigate catastrophic events, build trails, provide scenic vistas, or provide for public safety provided it meets the goal of providing a semiprimitive setting New road construction is not permitted

d *Comment* Manage big-game winter range for big game Big game should have first priority for winter forage Remove all livestock by November 1 Achieve 90 percent Habitat Effectiveness Index (HEI) on winter range Maintain 50 percent, "plus or minus" 10 percent of an area in well-distributed thermal cover An average of no more than 75 mile of open road per square mile Provide additional cover stands as needed Provide total closure of winter range to all motorized vehicles during winter season Add Indian Creek - Pine Creek along north side of Strawberry Mountains to elk winter range

Forest Response Alternatives C-Modified, F, and I all manage existing winter ranges for maintenance or enhancement Priority for forage on winter range will be made to big game on some areas in two alternatives Alternative C-Modified allocates 75 percent of the available forage to elk on those areas managed under Management Area 4B In Alternative I, timber management on winter range will be conducted to retain a Habitat Effectiveness Index of 6, and target 25 percent total cover and reduce open road density per square mile Activities may be restricted from December 1 through March 31 Transportation systems are to be managed to limit big-game winter stress-related factors Current winter range boundaries reflect those agreed upon by the Forest Service and Oregon Department of Fish and Wildlife based on geographic considerations and big-game use

e. *Comment*: Big game should have first priority for summer forage, then livestock Provide year-round closure of temporary roads Achieve 90 percent Habitat Effectiveness Index on summer range Provide a total of 40 percent cover well distributed over the summer range. Use Oregon Department of Fish and Wildlife definitions of thermal and hiding cover

Forest Response Adequate forage is expected on summer range to meet the needs of both livestock and big game Much of the area above 35 percent slope is not heavily used by cattle and is available for big-game use Elk summer habitat will be managed by

applying the Habitat Effectiveness Model. For example, Alternative I, would maintain a minimum HEI of 5, in the General Forest allocation and 0 7 HEI in the wildlife emphasis allocation.

f. *Comment* Protect special wildlife-use areas such as springs, wallows, calving and fawning areas, migration routes, breeding areas, meadows, mineral licks, caves, cliffs, and talus

Forest Response: Forest-wide standards provide for evaluation of special habitats during project planning to ensure timely protection and/or proper management

g. *Comment*: Dedicate a minimum of 120,000 acres to old-growth habitat with all ecoclasses represented.

Forest Response: Alternatives C-Modified, F, and I provide this level of old growth or more

h. *Comment*: Manage all Class I, II, and III streams for maximum productivity of native trout and anadromous fish populations No timber harvest or road construction in riparian areas, springs, bogs, and wet meadows, unless specified by wildlife biologists. Obliterate existing roads in these areas. Meet Oregon Department of Fish and Wildlife requirements for shade, water temperature, and vegetative cover where naturally possible. Strictly control domestic livestock grazing. Maintain buffer strips for all wetland areas as follows·

Class I	—	100-200 feet each side or greater
Class II	—	75-100 feet each side or greater
Class III	—	50-100 feet each side or greater
Class IV	—	50 feet each side or greater
Meadows	—	100-200 feet outside perimeters or greater
Springs, Bogs, and Floodplains	—	50-100 feet outside perimeters or greater
Aspen Areas	—	75-100 feet outside perimeters or greater

Forest Response: Forest-wide standards require meeting State water quality standards through the application of'Best Management Practices These standards are designed to maintain productivity of these waters for resident and anadromous fish. Alternative C-Modified would afford the greatest protection on these areas Riparian ecosystems management would generally protect to an average width of 100 feet on each side in Management Area 3 (A &B). Alternatives A, B-Modified and F would provide the least additional protection Management of these areas is intended to maintain or enhance the riparian character of these areas For all alternatives except C-Modified and portions of I, timber harvest is permitted with harvest generally being in the form of selection and group selection methods.

Sufficient canopy is to be left to provide shade needed to meet water quality standards for temperature. No-cut buffer strips were not considered necessary to always meet riparian management objectives, although it would better ensure these standards were met. Road construction is also permitted with location, construction, and maintenance designed so sediment and woody debris would not enter the channels of Class I and II streams. Except for occasional crossings, stream channels of Class I-IV streams are to be left essentially undisturbed

Quantified projections of the demand for anadromous fish from the Malheur National Forest have not been performed at this time As stated in the Forest Analysis of The Management Situation, however, the demand for Chinook salmon and steelhead trout in the Columbia Basin exceeds the current supply. Indications of demand exceeding

supply include court cases involving allocation of fish stock between Indian and non-Indian harvest groups, reduced or canceled sport-fishing seasons, and legislation designed to protect depleted stocks of fish for commercial fishery operations. Consequently, the assumption was made that all anadromous fish produced from waters within the Malheur National Forest would be demanded (i e , utilized). However, the production potential of the Forest is a very small percentage of the total increase necessary in the entire Columbia River Basin to meet demand

Road closure or obliteration may be considered in riparian areas to improve habitat for riparian dependent species This will be addressed on a site-specific basis in project analysis by interdisciplinary teams and in the Forest Travel Management Plan

Grazing is to be conducted in such a way that State water quality standards and fish populations are maintained at current levels or are in an upward trend. Each alternative provides for varying strategies to recover those riparian areas which are not currently in a satisfactory condition

i. *Comment* Treat all visually sensitive areas to meet management strategies for Visual Resources plus high standards of visual management on all trails Maintain 65 percent or more of the visual area in large, old trees (greater than 24 inches diameter at breast height) Provide corridors of 100 feet or greater each side of trails. Treat all Forest acres to maintain visual integrity regardless of whether areas are identified as being visually sensitive or not Require and enforce proper cleanup of sale areas by operators

Forest Response. Alternatives A, C-Modified, and NC emphasize visual management on all or most of the visual corridors on the Forest Foreground areas are managed to maintain 40 percent of the retention area in trees larger than 26 inches, and 20 percent of the partial retention areas in trees larger than 26 inches Middleground areas are managed to maintain a natural-appearing landscape Areas identified in the Forest planning process as not being visually sensitive will be managed under the guidelines of the indicated management strategy Slash treatment method will also be dependent on the resource objectives of the area under consideration

j *Comment* Increase the acreage of aspen stands occurring on the Forest

Forest Response Forest-wide standards provide for evaluation of special habitats during project planning to ensure timely protection and/or proper management Enhancing aspen stands will be considered when appropriate under the management strategy designated for the area

k *Comment* Maintain soil productivity and minimize soil loss

Forest Response Forest-wide standards specify numerous operational considerations to be followed to meet the objective of maintaining site productivity and minimizing soil loss

l. *Comment* Minimize the impacts of roads on other Forest resources

Forest Response Forest-wide standards and management strategies are designed to consider resource management objectives when designing, locating, and maintaining roads

m *Comment* Maintain production of high-quality ponderosa pine Emphasize large, high-quality sawlogs (26-30 inches diameter at breast height) in ponderosa pine stands using 240-year rotations. Emphasize board foot production in roaded, mixed conifer stands with easy access and easy operation Harvest at 16-18 inch diameter at breast height with 130-year rotations Emphasize species diversity

Forest Response. Alternative C-Modified provides for maintaining ponderosa pine species on pine climax and subclimax sites, with rotations based on growing 26-inch or larger diameter at breast height ponderosa pine. Alternative I proposes to grow moderate diameter ponderosa pine on pine climax and a majority of the pine subclimax sites. All alternatives emphasize growing 18-inch or larger diameter at breast height trees on mixed conifer sites The alternatives provide a range of harvest on roaded and unroaded sites Regeneration methods provide for a mix of naturally regenerated and planted sites Sites which are planted will be stocked with species according to the site conditions and alternative design. This combination of regeneration methods will result in a diversity of species.

n *Comment* Use dispersion factor of no more than 25 percent.

Forest Response No specific dispersion factor is specified for on-the-ground implementation Actual dispersion of harvest units will depend on resource management objectives with a minimum requirement of meeting created opening requirements described in the discussion on Management Requirements for harvest unit dispersion. Harvest unit dispersion factors used in FORPLAN for modeling purposes ranged from 10 to 38 percent, depending on the site and the resource management objective.

Confederated Tribes of the Umatilla·

a *Comment*: In all streams that produce both spring Chinook and steelhead, habitat protection and enhancement should be practiced to achieve full potential Smolt Habitat Capability Index (SHCI). Management to protect and enhance natural fish habitat should have top priority Enhancement and restoration measures are appropriate for use in degraded habitat.

Forest Response. All streams are to be managed to meet Oregon State water quality standards Stream habitat will also be managed to support desired fish populations in coordination with Oregon Department of Fish and Wildlife and Federal agencies Each alternative provides for varying investment levels to recover those riparian areas not currently in a satisfactory condition

b *Comment·* A sufficient amount of snags should be provided to maintain cavity-dwelling species at 100 percent of the population potential in areas dedicated or managed for old growth Snag management objectives should also be defined for other areas of the Forest.

Forest Response. Areas managed for old growth will generally be managed to maintain naturally occurring snags, and 100 percent potential population levels are estimated All other forested areas are to be managed for minimum potential population levels of 40 percent Snag management objectives above these management requirements have been established for other management strategies by alternative.

c. *Comment* The Confederated Tribes would view with concern any alternative that resulted in less than optimum habitat conditions for wildlife population levels as identified in the Oregon Department of Fish and Wildlife management objectives The Forest Plan should provide protection for big-game winter range areas identified jointly by the ODF&W and the Forest Service

Forest Response All alternatives are designed to meet habitat capabilities for State big-game wildlife management objectives Alternatives C-Modified, F, and I all manage identified winter ranges for maintenance or enhancement. Alternative A manages wildlife emphasis areas for maintenance of optimal big-game habitat.

d. *Comment.* Manage streamside vegetation to maintain 80 percent shade along full length of all streams used by anadromous fish Along anadromous fish streams having

less than 80 percent natural shade, revegetate to enhance shading Leave a no-cut buffer strip of a minimum of 200 feet, to include all identifiable riparian habitat, bordering all perennial streams and intermittent streams used by anadromous fish, and around wetlands and ponds Livestock grazing in riparian habitat must be under stringent control

Forest Response Alternative C-Modified provides management protection of anadromous riparian zones at the highest level of all alternatives Forest-wide Standards require meeting Oregon State water quality standards through the application of Best Management Practices These standards will maintain productivity of these waters for resident and anadromous fish Riparian ecosystems are generally protected to an average width of 100 feet on each side in Management Area 3 Management of these areas will maintain or enhance the riparian character of these areas Timber harvest is permitted with harvest generally being in the form of selection and group selection methods Sufficient canopy will be left to provide shading to meet water quality standards for temperature. Creating no-cut buffer strips was not considered necessary to meet riparian management objectives. Road construction is also permitted with location, construction, and maintenance designed so sediment and woody debris would not enter the channels of Class I and II streams Except for crossings, stream channels of Class I-IV streams should be left essentially undisturbed Grazing is to be conducted in such a way that State water quality standards and fish populations are maintained at current levels or are in an upward trend Each alternative provides for varying strategies to recover those riparian areas not currently in a satisfactory condition

e. *Comment* Forest plans should emphasize land uses and management practices which reduce watershed runoff during the winter/spring high-flow periods and increase discharge during the summer/fall drought period Emphasis should also be placed on maintaining or increasing annual groundwater recharge and on maintaining or improving water quality

Forest Response Water yield is expected to increase from larger watersheds because timber harvest activity reduces transpiration and evaporation losses. This results in gains which are available for streamflow On the Malheur National Forest, the majority of the stands are treated by overstory removal or partial cuts and not clearcuts Dispersion is also practiced so harvest units are not planned adjacent to each other until the created openings have trees well-established and growing in them. Due to the relatively low elevation of the Forest, there is little opportunity to affect runoff and groundwater recharge because only a small percentage of the Forest is in a high snow-deposition zone All these factors reduce the potential to significantly affect early spring runoff.

Forest-wide Standards require meeting State water quality standards through the application of Best Management Practices

f *Comment* Roots, berries, and medicinal plants are important to Tribal members

Forest Response Site-specific activities which may impact these areas will be addressed during project planning to ensure timely protection and/or proper management.

g *Comment* Management should provide for preservation of cultural and historic sites

Forest Response A professionally supervised cultural resource inventory survey program is conducted on a project-specific level for all undertakings in compliance with applicable legislation

h. *Comment* Road management and design must protect fish and wildlife habitat and minimize disturbance of fish and wildlife

Forest Response Forest-wide standards and management strategies are designed to consider resource management objectives when designing, locating, and maintaining roads. Transportation systems will be managed to limit big-game winter stress-related factors.

Oregon Department of Fish and Wildlife:

The Southeast District Office of the Oregon Department of Fish and Wildlife submitted suggestions for alternative development. In addition, the State Office developed criteria for evaluating Forest Plan alternatives The following discussion is a compilation of the concerns expressed by these two offices

a *Comment* All winter range areas should be allocated to a winter range management strategy. Additional areas recently identified should be managed as winter range.

Forest Response: Alternatives C-Modified, F, and I all manage identified winter ranges for maintenance or enhancement. The winter range areas used in the planning effort are those identified and agreed upon by Oregon Department of Fish and Wildlife and Forest Service officials at the beginning of the planning process

b. *Comment*: A minimum of 5-15 percent of each major plant community in the commercial forest should be dedicated for old growth

Forest Response All alternatives maintain at least five percent of the suitable land base in old growth Only Alternative C-Modified exceeds 15 percent. All alternatives maintain sufficient habitat to maintain viable populations of old-growth dependent species

c. *Comment*· Sufficient snag habitat should be retained in designated old growth to maintain cavity-dwelling species at 100 percent of their population potential Snag habitat should be provided in riparian areas to maintain 60-100 percent of potential populations On the remainder of the Forest, habitat should be provided to maintain these species at a minimum of 60 percent of population potentials

Forest Response Snag habitat will be managed at or near natural levels in designated old-growth areas This is estimated to provide approximately 100 percent potential population levels Riparian areas are managed to maintain sufficient habitat to maintain these species at from 60 to 80 percent of their populations General Forest areas vary by alternative, and range from 40 to 60 percent of potential populations, all with provisions for snag replacements

d *Comment*: All known winter bald eagle roosts should be allocated to a bald eagle winter roost management strategy

Forest Response All alternatives manage identified bald eagle winter roost areas for bald eagles

e *Comment*: All riparian habitat on the Forest should be managed to maintain at least 80 percent of potential for streambank stability, riparian vegetation, and shade. Retain all trees within 50 feet of Class I and II streams for future instream fish habitat.

Forest Response The riparian management area standards in all alternatives provide for meeting or exceeding Oregon State water quality standards. A key element of these standards is maintaining a 68° F water temperature where possible. Water temperature is a key indicator of the factors specified by the State in their recommendation Sufficient live trees are left in riparian zones in some alternatives to provide for future instream structural improvements Creating no-cut buffer strips was not considered necessary to meet riparian management objectives, although it would afford the greatest resource protection

f *Comment* Enhancement, maintenance, and restoration should be practiced on all anadromous fish habitat at 90 percent of the potential Smolt Habitat Capability Index

Forest Response: All streams are to be managed to meet Oregon State water quality standards Stream habitat will also be managed to support desired fish populations in coordination with Oregon Department of Fish and Wildlife and Federal agencies Each alternative provides for varying investment levels to recover those riparian areas not currently in satisfactory condition

g *Comment*: Nine areas are recommended to be allocated to a semiprimitive, nonmotorized management strategy

Forest Response Alternative C-Modified allocates the suggested roadless areas to this strategy.

5. Overview of All Alternatives

The alternatives developed for management of the Malheur National Forest are designed for full implementation and focus on the resolution of the planning issues. The limits and reference points identified in the benchmark analyses were used in constructing these alternatives Several of the alternatives are required by regulation or Regional and National direction The required alternatives and others developed for display in the Final Environmental Impact Statement are summarized in Section B 5 of this chapter.

a *Alternatives Considered but Eliminated from Detailed Study*

Several alternatives were considered but eliminated from detailed study in this EIS. Some of the alternatives were originally considered for full development, but were not developed in detail for this EIS as they either closely resembled other developed alternatives or were determined to be less than sufficient for implementation

Alternatives D, E, F-departure, G, and H have been deleted from the array of viable alternatives that were considered in the Draft Environmental Impact Statement. Resulting from an analysis of comments, the lack of broad public support and close similarities with other alternative designs render these unnecessary for inclusion as alternatives to be considered in this Final Environmental Impact Statement. Their further analysis was not considered necessary at this point, although they have contributed to the consideration of a reasonable range of alternatives. In many cases, specific attributes of these alternatives are brought forward into the remaining alternatives that are fully considered in this final Environmental Impact Statement